Remarks

I. Introduction

This is in response to the Final Office Action dated March 27, 2008 and is being submitted simultaneously with a Request for Continued Examination pursuant to 37 CFR § 1.114.

The Office Action rejected claims 16-21 and 23-25 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,356,546 (Beshai). The Office Action also rejected claim 22 under 35 U.S.C. §103(a) as being unpatentable over Beshai in view of U.S. Patent No. 5,444,693 (Arslan).

Applicants have amended independent claim 16. Claims 1-15 and 26-29 were canceled in a previous Amendment. Claims 16-25 are pending.

II. Rejections under 35 U.S.C. §103

The Office Action rejected claims 16-21 and 23-25 under 35 U.S.C. §103(a) as being unpatentable over Beshai. In order to "establish *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art." In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Furthermore, "all words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). See also MPEP § 2143.03. Beshai does not teach all of the claim limitations of amended independent claim 16. Therefore, Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. §103(a).

The present invention relates to the field of network planning and capacity management, in which network links can carry multiple channels for signal transmission. A path is determined to route a signal from a source node to a sink node over several network links. Each individual network link on a proposed signal path may have different vacant channels for transmitting the signal. Since

additional costs are incurred whenever a route requires a signal to change from one channel to another, a path is determined that utilizes the same channel over each link, thereby eliminating the need for the signal to change channels.

As described at page 9, lines 1-13 of the specification, in order to determine a signal path through a network utilizing the same channel, virtual circuit information is determined for various network structure groups and a spare circuit value is determined for each structure group using the virtual circuit information. The spare circuit value represents the number of connections through a structure group that may be made between two nodes without changing channels. The spare circuit values are then used in selecting a path to route a signal.

Independent claim 16 has been amended to more fully recite the above described aspects of the present invention. In particular, amended claim 16 now recites the following limitations:

> determining a spare circuit value for each structure group using said virtual circuit information, wherein said spare circuit value represents the number of connections through a structure group that may be made between the source node and the sink node without changing channels; and
> determining a path through said network using said virtual circuit information and said spare circuit value, wherein the virtual circuit information includes the number of paths using a common channel through said structure group between any pair of nodes, and wherein a slot-edge matrix is maintained for each data structure, and wherein the availability of a channel is determined based on said slot-edge matrix.

Beshai is directed to efficient network utilization via the method of substantially equalizing the vacancy of all channels, which creates a greater number of eligible candidate routes. Among the eligible candidate routes, direct routes are attempted first. As described at column 16, lines 39-50, if the direct routes do not have sufficient capacity, then the route selection is based on the vacancy of completing links to a destination. Accordingly, as Beshai states at

column 18, lines 19-20, "[r]oute selection is a function of both the static cost and route vacancy."

While the route selection algorithm disclosed by Beshai considers channel and route vacancy, it does not consider the additional cost that is incurred when a signal is required to change channels. Instead, Beshai teaches that "route lengths may vary significantly resulting in substantial cost difference." (Beshai, column 16, lines 43-45). The "least cost routing table" taught by Beshai arranges routes in shortest path order, (Beshai, column 17, lines 57-67), but does not consider the cost savings that will result by routing a signal between two nodes without changing channels. In particular, although the route selection algorithm of Beshai considers route and channel vacancy on individual links, Beshai does not describe selecting a route which utilizes the same channel for each link. Furthermore, Beshai does not describe determining any spare circuit value that represents a number of connections that can be made without changing channels. Therefore Beshai fails to disclose "determining a spare circuit value for each structure group using said virtual circuit information, wherein said spare circuit value represents the number of connections through a structure group that may be made between the source node and the sink node without changing channels;" and "determining a path through said network using said virtual circuit information and said spare circuit value, wherein the virtual circuit information includes the number of paths using a common channel through said structure group between any pair of nodes, and wherein a slot-edge matrix is maintained for each data structure, and wherein the availability of a channel is determined based on said slot-edge matrix" as recited in independent claim 16.

Since the cited art fails to disclose all of the limitations of amended independent claim 16, claim 16 is allowable over the cited art. Claims 17-25 are dependent from allowable independent claim 16, and are therefore also allowable.
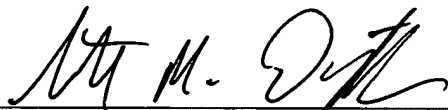
III. No New Matter has Been Added

No new matter has been added since all of the amendments to the claim are supported in the specification, drawings or claims as filed. The amendments to claim 16 are supported at least at page 9, lines 1-13, of the specification.

IV. Conclusion

For the reasons discussed above, all pending claims are allowable over the cited art. Reconsideration and allowance of all claims is respectfully requested.

Respectfully submitted,

Steven M. DiPasquo
Reg. No. 54,754
Attorney for Applicants
Tel.: 973-533-1616

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AT&T Corp.
Room 2A-207
One AT&T Way
Bedminster, NJ 07921